5

LIFE CYCLE MANAGEMENT OF JOINT PROGRAMS

General

The acquisition life cycle, as depicted in Figure 5-1, consists of a series of decision points and phases of activity. This chapter reviews those decision points and phases and provides general observations and recommendations regarding the joint program manager's (PM's) activities in each phase.

Pre-Milestone 0 - Determination of Mission Need

Just prior to Milestone 0, the Joint Requirements Oversight Council (JROC) reviews Mission Need Statements (MNS) for potential acquisition category (ACAT) I programs to determine if the expressed need is common to more than one component and may ultimately result in the initiation of a joint program. For ACAT IA programs, the JROC or the Principal Staff Assistant (PSA) may perform this function. As discussed earlier in this Handbook, joint

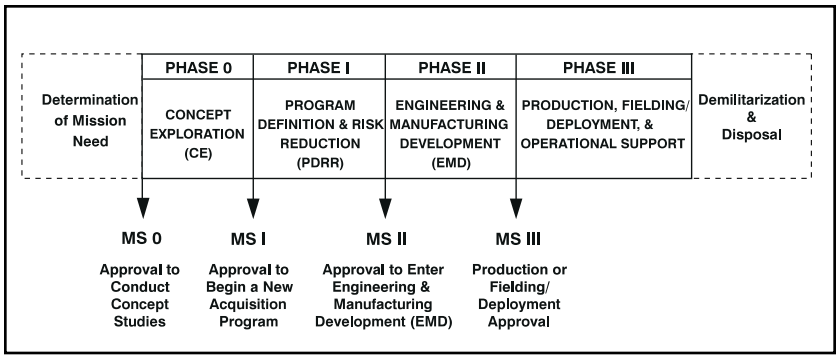

Figure 5-1. Acquisition Milestones and Phases

programs do not formally exist at this point in the acquisition cycle. Nevertheless, if a joint requirement is deemed to exist, the JROC/PSA recommends designation of a lead component for conducting the Concept Exploration (CE) phase of the program to the Under Secretary of Defense (Acquisition and Technology) (USD(A&T)), or the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence (ASD(C^3I)).

Milestone 0 - Approval to Conduct Concept Studies

The JROC examines the needs expressed by the components to confirm that they cannot be met by nonmateriel solutions (e.g., a change in tactics). For ACAT I programs, if the JROC determines that a common need expressed by two or more components can only be met by a materiel solution, the Defense Acquisition Board (DAB) assesses the JROC's findings and recommends to the USD(A&T) whether studies should be conducted. The USD(A&T) formally initiates the concept studies phase via an Acquisition Decision Memorandum (ADM) that names the lead components to conduct the studies, identifies minimum alternatives to be explored, and establishes the criteria for exiting the CE phase.

The JROC/PSA will perform a similar function for ACAT IA efforts. The ASD(C^3I) signs the ADM initiating the CE phase for these programs.

For ACAT II and III programs, the components, through the DoD Component Acquisition Executive (CAE), determine whether to initiate the CE phase.

Phase 0 - Concept Exploration (CE)

During Phase 0, the lead component initiates a wide variety of short-term studies to assess alternatives to satisfying the need. These studies address trade-offs among cost, performance, and schedule. Although at this point a joint program still does not formally exist, the activities of the staff conducting the studies begin to take

on some of the flavor of a joint program.

This is a critical stage in the development of a joint program. There must be coordination among the participating components to identify their specific needs. The lead component staff conducting the studies needs to be cognizant of the different components' approach to system employment and logistics support, to include possible component-unique needs. Because of the impact on the unit and life cycle costs (LCC) of the alternatives, the quantities and the logistics support infrastructures needed by each component are also addressed at this point. Furthermore, whoever is leading the program, prior to the designation of the joint PM, needs to conduct interservice coordination to develop the acquisition strategy. The proposed acquisition strategy must comply with all relevant arms control treaties.

It is here that the system requirements begin to take shape. Interviews with joint program personnel determined that defining *must meet system requirements* is the most critical factor in the eventual success of the program. The participants must agree on system requirements and identify specific service-unique requirements that need to be paid for separately by that component.

Milestone I - Approval to begin a New Acquisition Program

This milestone marks the official birth of a joint program. The decision to initiate a joint program to develop a new system is made only after it has been determined that the need cannot be met by using or modifying an existing military system, using or modifying an existing commercial or allied system, or pursuing a cooperative research and development (R&D) program with one or more allied nations.

The decision to initiate a joint program is promulgated via an ADM approving the initiation of the new joint program under the leadership of a particular component and giving permission to enter the next acquisition phase.

Phase I -Program Definition and Risk Reduction (PDRR)

During Phase I, joint program office (JPO) activities go into full swing. The program office is established (if not already formed) and jointly manned. Funding from multiple components is brought together under the control of the lead component. Funding for common research, development, test, and evaluation (RDT&E) is provided by the lead component, while funding for component-unique requirements is provided by the component needing the unique capability.

As the phase continues, contracts are let to develop and demonstrate hardware and software systems. Testing is also conducted to determine if the systems being developed meet the established requirements.

In addition, the logistics support infrastructure required to support the system is examined in detail. There are basic underlying differences in logistics infrastructures among the participating components. These differences primarily affect maintenance concepts and maintenance support equipment. The joint PM must ensure that sufficiently detailed planning occurs to account for these differences and that commonality is maintained to the greatest extent possible.

Because this is the fledgling stage of the system acquisition cycle, it is the phase during which the program is most vulnerable to external criticism, political pressures, and change. During this phase, the joint PM must work very closely with the participating components to maintain "jointness" and to balance attention between the internal day-to-day activities of the program and external factors that may work to derail the program. Briefings to external organizations become routine, and virtually every program management decision needs to be coordinated through multiple channels. Historically, it has been commonplace for participating components to second-guess the joint PM and develop their own

independent technical and cost estimates regarding the program. Such independent assessments, particularly if they lead to radically different conclusions, can result in mixed signals to higher headquarters and even to the Congress. Consequently, it is absolutely essential for the joint PM to be able to reconcile differences among the participating components so that common and consistent data are presented to outside organizations. This will prevent confusion and help maintain an accurate understanding of the program by all concerned parties.

At the end of the phase, the joint PM must be able to demonstrate success in meeting the objectives of Phase I and present results upon which to make a sound decision to proceed into the EMD phase.

Milestone II - Approval to enter Engineering and Manufacturing Development (EMD)

EMD of approval marks is a significant step for any program, but it is even more significant for a joint program because of the obstacles that generally must be overcome to get this far. Because of differences among the components, some joint programs never pass this step and are pursued no further. Others are completely restructured at this point before they are permitted to continue.

Although joint programs normally are initiated at Milestone I, this step may also mark the beginning of a joint program. Because the opportunity for satisfying joint requirements is reviewed throughout the acquisition cycle, some individual component programs have been merged at this point into a new single joint program. An example is the creation of the Joint Stand-Off Weapon (JSOW) Program, under the leadership of the Navy, resulting from the merger of the Navy's Advanced Interdiction Weapon System (AIWS) Program and some Air Force weapons programs that were still in the CE phase.

In either case, EMD approval constitutes perhaps the most signifi-

cant acquisition milestone because of the commitment that has to be made by the components to the continuation of the program after this point. According to Department of Defense (DoD) 5000.2-R, terminating or cutting funding or quantities from a joint program by any participating component may require the withdrawing component to provide continuing financial support to the program. Although this requirement is imposed from the onset of the joint program, given the much greater financial commitments associated with EMD, the decision to proceed into the next phase makes it extremely costly for a component to withdraw from participation after this point.

Phase II - EMD

The EMD phase presents a continuing set of challenges to joint program management. As this phase progresses, many activities within each of the participating components need to be brought together to ensure that the program proceeds on schedule. Among the activities that present the greatest challenge to the joint PM are joint component test and evaluation (T&E), and planning for deployment and subsequent logistics support.

System testing often becomes a problem area, particularly with regard to how well the system satisfies previously agreed upon "joint" requirements. There is often pressure to develop component-unique modifications and variants to the basic system to meet unique requirements. Another issue that arises is the desire by each component to participate directly in the testing of the system, not only in terms of operational test and evaluation (OT&E), but also in developmental test and evaluation (DT&E). This competition has often led to duplicate testing and the manufacture of extra test assets to satisfy these desires. A unified test plan under the management of the lead component must be coordinated with the participating components to ensure that system tests address the test concerns of the participating components.

As the EMD phase progresses, more detailed planning must be

conducted regarding how the system will be deployed and logistically supported. The magnitude of planning activities that must occur may lead to the development of large, often separate staffs within the program office to conduct the logistics planning for each component and perform the necessary interservice coordination to ensure smooth deployment.

The joint PM must work with each of the components to ensure continued funding of the program. In particular, final agreement must be reached regarding proposed production quantities and rates because of their effect on unit costs and logistics support.

During this phase, the JPO must plan for the support of the system once it is deployed. One such type of support entails collecting and analyzing feedback from the user components on the reliability of the systems used in the OT&E. This means that procedures and systems need to be developed to physically collect and process data that may be collected in different reporting formats and processed using different computer systems. It also means that the joint program staff that will analyze the data need to be cognizant of the differences in reporting criteria, formats, and levels of detail used by the different components in collecting the data.

The systems for OT&E may be acquired through low rate initial production (LRIP). The number of systems needed will have to be coordinated with the participating components well in advance. The numbers will be based on an early operational assessment of prototypes by an independent operational test agency during Phase I. It is important to note the reasons that may be used to justify an LRIP: to provide production representative articles for OT&E; to work the problems out of the manufacturing process; and to ramp up to full rate production smoothly.

Milestone III - Production or Fielding/Deployment Approval

The decision to proceed from EMD into Phase III signifies that the joint program has successfully navigated innumerable obstacles

over the years and is ready to begin delivering usable products to the components. To fund the production of the system, each participating component must program procurement dollars for its share of the production.

Phase III - Production, Fielding/Deployment and Operational Support

During Phase III the principal responsibility of the joint PM is to ensure that the system is being built as planned, on cost, and delivered satisfactorily to the user. Phase III calls for even more coordination with the user Components, particularly with regard to delivery of systems and their accompanying maintenance support subsystems including extensive amounts of technical orders and other documentation. To facilitate this process, the JPO may need to have personnel colocated with the logistics organizations of the user components.

Recognizing that virtually every major weapon system has considerable overlap between the production and subsequent operations and support, the joint PM must ensure that procedures and systems are in place during Phase III to support the system after it is fielded.

Feedback from users invariably results in a need to modify the system even as it is being produced and deployed. This necessity means that the joint PM must continue to coordinate with the users on requirements and identify common and component-unique modification requirements. Furthermore, it means that, although the program is in the Phase III, RDT&E funding must continue to be provided to pay for continued development and testing of these modifications. Agreement on the required modifications and funding for them can normally be handled within the purview of the JPO in coordination with the Components affected.

Operational support begins with delivery of the first systems to the user. The primary responsibility of the joint PM is to ensure

that users' needs continue to be met, primarily through tracking system reliability and processing problem reports. It also entails managing continued production of spares and repair parts and maintenance support systems, identifying the need for system modifications and improvements, and managing them once they are approved.

Furthermore, it is common for joint PMs to manage multiple variants of a system, each of which may be in a different phase of the acquisition cycle. A classic example of such a program is the AIM-9 Sidewinder Air-to-Air Missile program, which in 1991 included the AIM-9L in operation, the AIM-9M in production and being deployed, the AIM-9R in the EMD phase, and the AIM-9X in the CE phase.

Modification Approval (If Required)

Sometimes a major modification to the system must be made, because of evolving changes in the threat, to overcome deficiencies discovered through operational testing or use, or to reduce operations and support costs. Changes that need to be made to systems are considered "modifications." Whenever the magnitude of a modification is such that it meets ACAT I or IA criteria or is designated as Major Defense Acquisition Program (MDAP) by the USD(A&T), the proposed modification will be considered a separate acquisition effort. For modifications or changes that do not meet ACAT I or IA, they will be considered part of the basic program.